CLAIM REJECTIONS

35 U.S.C. §102

The Examiner rejects Claims 1 - 7 and 24 under 35 U.S.C. 102(b) as being anticipated by Wight et al (U.S. Patent No. 5,082,342). As stated in MPEP 2131.01, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," quoting *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The Applicant submits that the Examiner has not shown that Wight teaches each and every element as set forth in the rejected claims.

Claim 1

The Examiner asserts that Wight discloses "a laser cavity 10 comprising an electrically sensitive material and having a length dimension and a width direction, the cavity producing a laser light propagating substantially parallel to the length dimension of the cavity." The Examiner further asserts that "excitation occurs in the waveguide device 10, and thus it may be interpreted as a laser cavity." The Applicant disagrees that Wight teaches a laser cavity.

Wight describes device 10 as an "electro-optic **waveguide** device." See col. 7, ll. 26 - 27 (bold print used fir emphasis). Wight further describes the device 10 as comprising "an assembly of waveguides (30) connected to a common light input region (41) and forming a common far field diffraction pattern (44)." See abstract of Wight. Wight further describes that "varying the set of bias voltages applied to the waveguides (30 produces output phase variation which changes the position of the diffraction pattern principal maximum (46) to produce beam steering." See abstract of Wight. Essentially, Wight discloses that device 10 is an optical beam steerer. See also Wight, col. 1, ll. 7 - 9. The Applicant submits that one skilled in the art would understand that Wight discloses a waveguide device and not a laser cavity.

The Examiner asserts that excitation occurs in the waveguide device 10 and, therefore, it may be interpreted as a laser cavity. However, the Applicant submits that for waveguide device 10 to be

considered as a laser cavity, Wight should disclose that the waveguide device 10 actually exhibits a lasing condition. Wight discloses that light input to the waveguide device 10 excites "substantially only the lowest order spatial mode in the horizontal plane," (see col. 9, ll. 45 - 47) but Wight does not disclose that this excitation results in the creation of a lasing state in the waveguide 10. The Applicant submits that the mere fact that excitation may occur in the waveguide device 10 does not establish that Wight teaches that the waveguide device 10 is a laser cavity.

The Applicant requests that the Examiner use the definition of a laser cavity known to one skilled in the art. For example, *The Illustrated Dictionary of Electronics*, 7th ed., Stan Gibilisco, ed., McGraw-Hill, 1997, p. 392, defines a laser cavity as "an optical-resonant cavity that results in the emission of coherent light." (The cited pages from this reference are attached to this paper). The coupling of laser light to the waveguide device 10, as shown in Wight, FIG. 3, does not make the waveguide device 10 a laser cavity.

On page 6 of the Office Action, the Examiner states that the excitation section may be broadly interpreted as a laser cavity. However, the Examiner may not interpret the claim so broadly as to modify the actual teachings of the cited reference or adopt an interpretation that differs from one that would be understood by one skilled in the art. Therefore, the Applicant respectfully requests that the Examiner show where Wight teaches that the waveguide device 10 comprises a laser cavity using an interpretation that one skilled in the art would adopt. Otherwise, the Applicant respectfully requests that the Examiner withdraw the rejection of Claim 1 based on Wight.

The Applicant further submits that Wight does not teach, disclose or suggest "said electric field propagating in a direction substantially perpendicular to the direction of propagation of laser light within the laser cavity." FIG. 1 of Wight shows a layer of aluminum 32 extending to an electrode bond pad 34. The layer of aluminum 32 extends substantially parallel to the waveguides 30 of the device 10. As shown in FIG. 1, light propagates in the waveguides 30 from the end illuminated by light 40 to the output ends of the waveguides (as shown by the output beams 42). The Applicant submits that one skilled in the art would understand that the application of a changing electrical signal at the electrode bond pad 34 would cause an electric

field to propagate from the electrode bond pad 34 to the end of the layer of aluminum 32 near the output ends of the waveguides (again shown by the output beams 42). That is, the Applicant submits that Wight discloses the propagation of the electric field in a direction substantially parallel to the direction of propagation of light. Therefore, the Applicant submits that Wight does not teach, disclose, or suggest "said electric field propagating in a direction substantially perpendicular to the direction of propagation of laser light within the laser cavity" as claimed in Claim 1.

The Applicant submits that the Examiner has not shown that Wight teaches each and every element as set forth in Claim 1. Specifically, the Applicant submits that the Examiner has not shown that Wight teaches a laser cavity as claimed in Claim 1 and the Examiner has not shown that Wight teaches "said electric field propagating in a direction substantially perpendicular to the direction of propagation of laser light" as claimed in Claim 1. Therefore, the Applicant respectfully requests that the Examiner withdraw the rejection of Claim 1. The Applicant further requests that the Examiner withdraw the rejection of Claims 2 - 8 and claims 24 - 26 based on Wight, since these claims depend either directly or indirectly on Claim 1.

Claim 2

The Applicant also submits that the Examiner has not separately shown where Wight teaches each and every additional element as set forth in Claim 2. The Examiner asserts that the means disclosed by Wight are "equal to or larger than the cavity." However, Claim 2 recites "said traveling wave structure having a width equal to or greater than the length dimension of the laser cavity and having a length equal to or greater than the width dimension of the laser cavity and said electric field propagating along the length of the traveling wave structure."

The Examiner asserts that the electric field "propagates perpendicularly, i. e. vertically through the laser body, to the emission of the edge-emitted laser light." See Office Action, page 2. Therefore, it appears that the Examiner is asserting the electric field propagates from the layer of aluminum 32 to the substrate 14. However, Claim 2 recites, in part, "said electric field propagating along the length of the traveling wave structure." The Applicant submits that the

Examiner has not shown that Wight teaches this element. Therefore, the Applicant also respectfully requests that the Examiner withdraw the rejection of Claim 2, and all claims that depend either directly or indirectly on this claim, for this additional reason.

Claims 3 - 5

The Applicant respectfully requests that the Examiner withdraw the rejection of Claims 3 - 5 at least based upon their dependence, either directly or indirectly, on Claim 1.

Claim 6

The Applicant also submits that the Examiner has not separately shown where Wight teaches each and every additional element as set forth in Claim 6. The Examiner asserts that "the laser cavity is pumped from the side," but has provided no citation to a portion of Wight that provides such a teaching. Wight does teach the application of light from a laser to the waveguide device. See, for example, FIG. 3 of Wight. However, this light is merely the light to be steered by the waveguide device. Therefore, the Applicant respectfully requests that the Examiner specifically show where Wight teaches "the laser cavity comprises a laser cavity in a pumped laser" as required under 37 CFR 1.104(c)(2). If the Examiner is unable to make such a showing, the Applicant respectfully requests that the Examiner withdraw the rejection of Claim 6.

Claim 7

The Applicant also submits that the Examiner has not separately shown where Wight teaches each and every additional element as set forth in Claim 7. The Examiner asserts that " laser niobate may be included in the cavity," but has provided no citation to a portion of Wight that provides such a teaching. In fact, Wight specifically states that "the waveguide core layer 18 consequently has edge reasons in the front and rear faces which are cleavage planes of crystalline GaAs (this is not possible with materials such as **lithium niobate**)." See Wight, col. 7, ll. 62 - 65, underlining and bolding added for emphasis. It appears that Wight teaches the waveguide device 10 does not comprise lithium niobate. Therefore, the Applicant respectfully requests that the Examiner specifically show where Wight teaches "said laser cavity comprises doped lithium

niobate" as required under 37 CFR 1.104(c)(2). If the Examiner is unable to make such a showing, the Applicant respectfully requests that the Examiner withdraw the rejection of Claim 7.

Claim 24

The Applicant submits that the Examiner has not shown that Wight teaches each and every limitation as set forth in Claim 24, for reasons similar to those set forth above for Claim 1. That is, the Applicant submits that the Examiner has not shown that Wight teaches a laser cavity as claimed in Claim 24 and the Examiner has not shown that Wight teaches "a traveling wave structure disposed to propagate an electric field transverse to the direction of propagation of the laser light" as claimed in Claim 24. Therefore, the Applicant respectfully requests that the Examiner withdraw the rejection of Claim 24 for these reasons.

The Examiner further asserts that Wight teaches longitudinally coincident gain and phase sections and relies upon the disclosure of an integrated interferometer 456 for such a teaching. However, Wight merely discloses that the element 456 comprises a Mach Zehnder interferometer structure and further states that "Mach Zehnder interferometers structures in lithium niobate integrated optics are well known and will not be described further." The Applicant fails to understand how the disclosure of a Mach Zehnder interferometer teaches longitudinally coincident gain and phase modulation sections, as asserted by the Examiner.

On page 6 of the Office Action, the Examiner asserts that the waveguide 10 provides excitation and thus is a gain section. Where does Wight actually state that there is any gain applied to the light propagating in the waveguides 30? Further, Wight states that "varying the set of bias voltages applied to the waveguides (30) produces output phase variation." See abstract of Wight. Therefore, it appears that the waveguide 10 provides a phase change and no change in gain.

Therefore, the Applicant specifically requests that the Examiner show how Wight teaches "longitudinally coincident gain and phase sections," as required by 37 CFR 1.104(c)(2). If the Examiner is relying upon facts within his own personal knowledge, the Applicant respectfully requests that the Examiner provide an affidavit setting forth those facts and the basis for those

facts, as provided for under 37 CFR 1.104(d)(2). Otherwise, the Applicant respectfully requests that the Examiner withdraw the rejection of Claim 24.

35 U.S.C. §103

The Examiner rejects Claims 8 and 25 - 26 under 35 U.S.C. 103(a) as being made obvious by Wight. The Applicant respectfully requests that the Examiner withdraw the rejection of these claims at least based upon their dependence on the base claims discussed above. The Applicant further submits that the Examiner has not established a *prima facie* case of obviousness for these claims based on Wight.

Claims 8

The Examiner asserts that "laser cavities are well known to include index gratings as a means for selecting a wavelength of the cavity." The Examiner further asserts that "it would have been obvious to one skilled in the art to include an index grating so that one may change the wavelength of the emitted light." As pointed out above, the Applicant submits that the Examiner has not shown that Wight discloses a laser cavity. Further, the device disclosed by Wight is directed at optical beam steering applications, as described above. Since Wight is concerned with optical beam steering, why would one skilled in the art wish to modify Wight to allegedly change the wavelength of the light, since such a change has nothing to do with the beam steering goal of the device. Further, would not such a change in wavelength possibly interfere with the beam steering function of the device of Wight, since it relies on phase variation to control beam steering. It appears that the Examiner has improperly relied upon the Applicant's own disclosure as a template to modify the teachings of Wight.

Further, the Applicant submits that the Examiner has not shown how Wight can be modified to teach, disclose or suggest "said index grating having a dielectric constant and said uniform electric field changing the dielectric constant of said index grating." The Applicant submits that it is not enough for the Examiner to simply assert that "laser cavities are well known to include index gratings as a means for selecting a wavelength of the cavity." The Examiner must show that the prior art reference teaches or suggest <u>all</u> the claim limitations. See MPEP 2143. Hence,

the Applicant submits that the Examiner has not shown that Wight can be modified to include "said uniform electric field changing the dielectric constant of said index grating."

Claim 25

The Applicant respectfully requests that the Examiner withdraw the rejection of Claim 25 at least based upon its dependence on Claim 24.

Claim 26

The Examiner concedes that Wight does not disclose that the traveling wave structure is tapered with the maximum width adjacent to the cavity. However, the Examiner asserts that changes in shape have been held to be obvious. The Examiner therefore concludes that it would have been obvious to change the shape of the traveling wave structure of Wight absent any evidence that the shape is significant.

The evidence that the shape of the traveling wave structure may be significant is provided by the Applicant's specification. The specification states on page 12, ll. 15 - 16, that "a small-angle taper in the electrode may be used to spread the RF field within the electrode uniformly." Therefore, the Applicant submits that the change in shape, as claimed in Claim 26, may be significant. The Examiner is therefore requested to consider this evidence of nonobviousness and withdraw the rejection of Claim 26.

Conclusion

Hence, the Applicant respectfully submits that the Examiner has not shown that Claims 1 - 8 and 24 - 26 are anticipated or made obvious by the cited reference. In view of the above, reconsideration of the rejection of Claims 1 - 8 and 24 - 26 and allowance of all claims of the application are respectfully solicited.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, the Commissioner is authorized to treat this response as including a petition to extend the time

period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office at facsimile number 703-872-9306 and addressed to. Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on.

April 5, 2004
(Date of Transmission)

Ross A. Schmitt
(Name of Person Transmitting)

Ross A. Schmitt
(Signature)

4-5-2004
(Date)

Respectfully submitted,

Ross A. Schmitt

Ross A. Schmitt
Attorney for Applicant
Reg. No. 42,529
LADAS & PARRY
5670 Wilshire Boulevard, Suite 2100
Los Angeles, California 90036
(323) 934-2300

Encl.: *The Illustrated Dictionary of Electronics*
- 3 pages

The Illustrated Dictionary of Electronics

Seventh Edition

Stan Gibilisco
Editor-in-Chief

McGraw-Hill
New York San Francisco Washington, D.C. Auckland Bogotá
Caracas Lisbon London Madrid Mexico City Milan
Montreal New Delhi San Juan Singapore
Sydney Tokyo Toronto

Library of Congress Cataloging-in-Publication Data

Gibilisco, Stan.
The illustrated dictionary of electronics / Stan Gibilisco.—7th ed.
p. cm.
ISBN 0 07-024186-4 (pbk.)
1. Electronics—Dictionaries I. Title.
TK7804.G497 1997
621.381'03—dc21 97-9081
CIP

McGraw-Hill
A Division of The McGraw-Hill Companies

2 3 4 5 6 7 8 9 0 FGR/FGR 9 0 2 1 0 9 8

ISBN 0-07-024186-4

The sponsoring editor for this book was Scott Grillo, and the production supervisor was Pamela Pelton. It was set in Bookman by Lisa Mellott through the services of Barry E. Brown (Broker—Editing, Design and Production).

Printed and bound by Quebecor/Fairfield.

linear portions of the characteristic are usually encountered. Compare SMALL-SIGNAL OPERATION.

large-signal transistor See POWER TRANSISTOR.

large-signal voltage gain In an integrated-circuit amplifier, the voltage gain under open-loop conditions, determined as the difference in the output voltage divided by the difference in the input voltage. It is usually specified in volts per millivolt or volts per microvolt.

Larmor orbit The path followed by a charged particle in a constant magnetic field. Because of interaction between the external field and the field generated by the particle, the charged particle travels in a circular path.

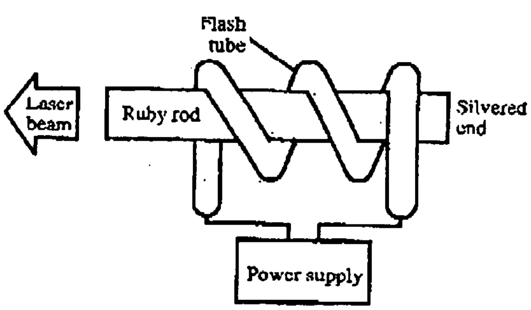
laryngaphone See THROAT MICROPHONE.

LASCR Abbreviation of LIGHT-ACTIVATED SILICON-CONTROLLED RECTIFIER.

LASCS Abbreviation of LIGHT-ACTIVATED SILICON-CONTROLLED SWITCH.

lase To emit coherent electromagnetic energy in the visible-light spectrum. See LASER.

laser Acronym for *light amplification by stimulated emission of radiation.* A device that produces coherent radiation in the visible-light range, that is, between 750 and 390 nanometers (one nanometer is 10^{-9} meter). Some devices that produce coherent radiation in the infrared, ultraviolet, or X-ray parts of the spectrum are also referred to as lasers. Lasers can be either continuous or pulsed, and are characterized by coherent, monochromatic emissions. The peak intensity ranges from a few microwatts to many megawatts.



laser

laser beam The radiation from a laser—especially if the divergence is very low, that is, the rays are almost perfectly parallel, resulting in minimal divergence.

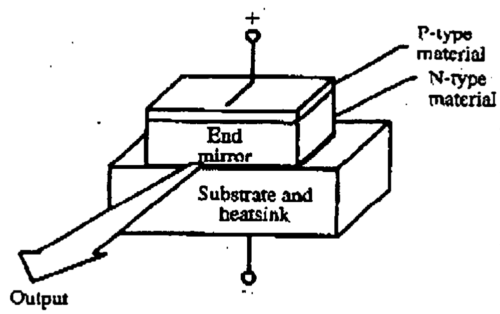
laser-beam communication A form of coherent infrared or optical communication in which a laser beam is the link between transmitting and receiving stations. Also see LASER, LASER DIODE, and LIGHT-BEAM COMMUNICATION.

laser capacitor An energy-storage capacitor used to discharge-fire the exciter lamp of a laser. Also see LASER.

laser cavity An optical-resonant cavity that results in the emission of coherent light.

laser cutting A method of using a laser for severing materials.

laser diode A special form of semiconductor light-emitting diode (LED), usually of the gallium-arsenide type, that emits coherent light when a voltage is applied to its terminals. Also see LASER.



laser diode

laser disk A method of reproducing sound in which a laser is used to recover the sound from a compact disk.

laser Doppler radar Acronyms, *ladar* or *lopplar*. A form of Doppler radar using the light beam of a laser instead of radio waves.

laser eye surgery A method of repairing the retina of the eye without cutting the eyeball, using laser beams to push loose retina tissue back into place.

laser gun A colloquial term for a weapon that makes use of a laser as a device of destruction.

laser optical videodisc system A system in which a low-powered laser reads audio and video information from a videodisc and delivers it to a television receiver.

laser ranger A radar-like device using intense light (instead of microwaves).

laser show A three-dimensional, midair display having motion, made by using lasers in various combinations.

laser surgery The application of a laser in medicine for the purpose of assisting in, or actually performing, operations on human subjects.

laser welding Welding (especially of tiny pieces) with the heat produced by a laser beam.

lasing The emission of coherent electromagnetic energy in the visible-light spectrum. See LASER.

lat Abbreviation of L
latch 1. A feedback l
circuit, such as a f
given state. 2. A sin
ment that consists
maintain a closed
relay contacts afte
single electrical pul
latching current In
value of anode curr
holding current) t
immediately after
latching relay An el
tronic relay that lo
energized for (on o
latch-on relay See l
latchup In a transis
normal condition
remains at its swi
sistor is switched
latch voltage The
flop changes state
late contacts Rela
following the move
the relay's operati
latency 1. The tim
to deliver informa
serial storage sys
word time.
latent image 1. In
age that is not y
in the mosaic of
that will appear
per is developed.
lateral chromatic
fecting the sharp
images.
lateral compliance
the ease with wh
ally as it follows
ANCE and LATE
lateral-correction
tube, a magnet o
attached to the f
controls horizon
for convergence.
lateral magnet
MAGNET.
lateral recording
groove undulat
VERTICAL REC
latitude Abbrevia
sured around t
north and sou
LONGITUDE.
latitude effect T
netic field to d
subatomic part
earth near the
number reachi
Latour alternator